

FORTIFICATION OF INORGANIC OR ORGANIC IRON WITH PROVITAMIN A PUMPKIN (*Cucurbita moschata*) IN WET NOODLE TO INCREASE IRON BIOAVAILABILITY

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Successful iron fortification depends on the bioavailability of iron fortificants such as organic and inorganic iron and their interaction with other micronutrient such as vitamin A or provitamin A. This experiment was conducted to fortify iron (organic and inorganic) with or without provitamin A pumpkin in wet noodle and to study its effect on panelist acceptance, nutrient content and bioavailability in mice.

Completely randomized trial designed was used in this experiment. Optimized iron fortification was tested using inorganic (FeSO_4) or organic iron (Bioplex) with iron level of 100 ppm, 150 ppm, 200 ppm. Optimized pumpkin fortification was tested using steam or pumpkin powder with pumpkin level of 10%, 15% and 20%. To test the nutrient content and fortificants bioavailability in mice, 5 treatments were employed i.e: 1. control (without iron fortificant), 2. inorganic iron (FeSO_4), 3. organic iron (Bioplex, Alltexh), 4. inorganic iron with pumpkin, 5. organic iron with pumpkin. Data were evaluated by one-way ANOVA and continued by Duncan's test with 5% confidence.

The results showed that 200 ppm iron fortificant had acceptable colour, taste and texture. Substitution of steam pumpkin in wet noodle produced better colour, taste and texture compared to pumpkin powder. Substitution of 15% pumpkin improved significantly the texture of wet noodle.

Iron fortificant and provitamin A pumpkin increased iron, ash and betacaroten in wet noodles. Bioavailability test in mice showed that the best iron absorption was found in FeSO_4 with pumpkin groups. Fortification of iron with provitamin A pumpkin increased serum iron and percentage of saturated transferrin. Fortification of Bioplex iron or FeSO_4 with pumpkin or Bioplex with pumpkin increased significantly hemoglobin levels.

The iron-fortified wet noodle with provitamin A pumpkin can serve as functional food for vulnerable group of iron deficiency anemia in Indonesia.

Keyword: fortification, organic iron, inorganic iron, provitamin A, pumpkin, wet noodle, FeSO_4 , Bioplex